
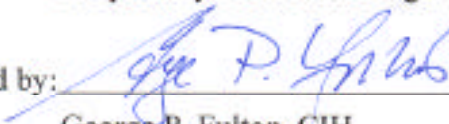
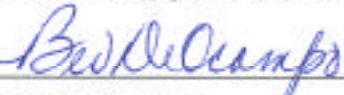


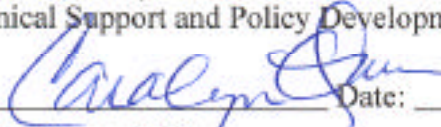
LAWRENCE LIVERMORE NATIONAL LABORATORY

Respiratory Protection Program

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Respiratory Protection Program

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Introduction

This document compiles extant Respirator Services procedures. The two major Federal regulations affecting respirators, the Occupational Safety and Health Administration's regulation, 29 CFR 1910.134 "Respiratory Protection", and the National Institute for Occupational Safety and Health's acceptable performance standards for respirators that they will approve, 42 CFR 84 "Respiratory Protective Devices", are in a state of flux. This means that any LLNL *ES&H Manual* document could need major revision at an unpredictable time in the future. As a result, this document is meant to replace an *ES&H Manual* document until the Federal regulatory situation becomes sufficiently stable to permit the development of an *ES&H Manual* document.

Comments are welcome. Due to the flexibility inherent in not posting the Respiratory Protection program in an *ES&H Manual* document, it will be easier to incorporate comments and experience into the program. Please call or e-mail the Respirator Program Administrator, Gordon Miller, at ext. 38036 or miller22@llnl.gov if you have questions or comments.

Revision History: These policies were formerly published as Industrial Hygiene Policies #150 through 157 and published in the Industrial Hygiene Policy and Information Manual (Section 4.01 of the *Hazards Control Manual*).

Chapter 1

Issuing and Returning Respirators

1.1 SCOPE

This procedure specifies the requirements for the issue and return of all Respiratory Protective Equipment for all LLNL personnel, contractors, and supplemental labor conducting activities on site, or elsewhere, related to their employment. The only exceptions are for work at the Nevada Test Site, Oak Ridge's DOE facilities, the Yucca Mountain Project, Pantex, and Los Alamos National Laboratory which are covered by reciprocal agreements with the prime contractors at those locations. Refer to the LLNL Environment, Safety & Health (ES&H) *Manual* Chapter 10.05 for more information regarding the agreements. This does not apply to Sandia National Laboratory, Livermore (SNLL). Respirator Services issues respirators to SNLL with appropriate medical approval, but a Hazards Assessment and Control form (HAC) is not required.

1.2 PURPOSE

In order to help ensure that employees and contractors do not experience any unnecessary exposure to airborne contaminants it is imperative that they receive only the appropriate Respiratory Protective Equipment and that they are fully qualified for its use. This document outlines the applicable policies and procedures to prevent the use of improper equipment or the unauthorized or unsafe use of respirators.

1.3 POLICY

Respirators will only be issued to qualified users, their supervisors, Issue Point Administrators (IPAs) or other personnel designated by the Respirator Program Administrator (RPA). Users will be medically qualified by a Health Services Department (HSD) physician or other licensed health care professional in accordance with 29 CFR 1910.134.

The exception to this rule is that verbal authorization to issue respirators is allowed in emergencies and situations requiring prompt action, but the appropriate documentation specified in Section 1.4, typically a HAC, must be provided to Respirator Services, the RPA, and, if applicable, the IPA within five working days. Follow up is essential, so a reminder shall be e-mailed to the discipline and the discipline's supervisor if the HAC is not provided within five working days.

All respirators shall be stored to prevent damage and unauthorized access or use. Emergency use devices, (including, SCBA and air-purifying devices) however, may not be stored in a manner that prevents their prompt access in the event of an emergency.

Respirators will only be issued from Respirator Services to the designated IPA, Supervisors, or Health and Safety Technicians. (Exception: One respirator may be issued directly to qualified users for their own use).

Respirators will only be issued from Respirator Services as complete assemblies (i.e., no parts, pieces, cartridges, or non-NIOSH approved devices will be issued without approval from the RPA).

Certain LLNL areas or facilities may have requirements that exceed those stated herein. In these cases, all such special requirements will be in writing and approved by the responsible ES&H Team Discipline member, or the RPA.

Air Supplied Respirators are handled in the same manner as all other respirators, except that all air supplied equipment (i.e., compressors, bottled air, SCBAs, etc.) must be requested, from the Fire Department, at least one working day prior to use. (See *ES&H Manual* Section 10.05).

Area records of the issue and return of respiratory protective equipment will be maintained for at least three years.

All equipment returned to Respirator Services from any operation or facility will be free of contamination, documenting this survey using Form LL3909. This contamination-free condition will be confirmed at the place where the respirators are used before they are returned to Respirator Services. Radiological contamination shall be evaluated by measurement. Chemical contamination shall be removed by appropriate cleaning followed by a thorough visual inspection. Any part which could have residual chemical contamination will be discarded if it can not be cleaned.

Non-LLNL employees, such as those from Labor Only contractors, will be issued respirators only if:

- LLNL permits issuing respirators to employees working for their organization,
- they are medically qualified as determined by HSD,
- they are trained in the use of the respirators they could or will be issued, the proposed respirator use is covered by a HAC, and
- the LLNL and contractor supervisor who will oversee their use of respirators have taken HS-4660.

Visitors from other DOE contractor organizations will be issued respirators if they are medically qualified as determined by their organizations' occupational medicine service, they are trained in the use of the respirators they could or will be issued, the proposed respirator use is covered by a HAC, and the LLNL supervisor who will oversee their use of respirators has taken HS-4660.

1.4 PROCEDURES

The issuer, which may be either an IPA or Respirator Services, will confirm both the recipient's qualification prior to each request by:

- Checking the wearer's approval card.
- Checking the HAC or the Asbestos, Lead, or Radiological Work Permit.
- Reviewing respirator training/fit-testing database, or monthly approvals listing (available on request), and/or checking with Respirator Services staff, and ensuring that an individual does not have any condition (such as facial hair or scarring that may affect the respirator seal).

When respirators are issued from Respirator Services, their type, destination, quantity and the responsible party are recorded.

1.5 RESPONSIBILITIES

1.5.1 Respirator Services will:

- Issue air purifying respiratory protective equipment and airline respirators to authorized individuals who are medically approved by HSD. Respirators will be issued only if a current Asbestos Work Permit, Lead Work Permit, Radiological Work Permit, HAC, or Safety Plan (SP) is available.
- Promptly notify Emergency Management Division (EMD) personnel, through the EMD Secretary, when requests for supplied air equipment come in to Respirator Services,
- Maintain documentation of all equipment issued.
- Issue filtering facepiece respirators in accordance with selection criteria specified in the Filtering Facepieces Policy.

- Issue air supplied respiratory protective equipment (excluding SCBAs and compressed air in cylinders), breathing air compressors, regulators, compressed breathing air, airlines, etc. to authorized individuals pursuant to LLNL policies.

1.5.2 EMD will:

- Issue Interspiro SCBAs and cylinders containing compressed breathing air,
- Conduct HS-4630 training prior to issuing SCBAs,
- Maintain documentation of all equipment issued.

1.5.3 RPA will:

- Review and approve all proposed issues of respirators to outside construction contractor and visiting personnel prior to providing respiratory protection.

1.5.4 ES&H Team H&S Technicians will:

- Conduct a release survey of all respirators returning from radioactive material handling areas, and document this survey with Form LL3909. In other areas where carcinogenic or mutagenic materials are handled, the assigned H&S Technician will similarly ensure that respirators are free from contamination prior to return to Respirator Services.

1.5.5 Supervisors and IPAs will:

- Issue respirators to LLNL (including contractor personnel) only after confirming qualifications.

1.5.6 Respirator Users will:

- Furnish proof of medical approval when they come to Respirator Services or to an IPA to obtain respirators. This needs to be done only once per year.
- Inspect respirators before and after each use.
- Return respirators daily unless other criteria are established in a specific area.

1.6 DEFINITIONS

Issue Point Administrator (IPA) - An individual that has successfully completed HS-4660 (Respirator Training for Supervisors and Issue Point Administrators) and is designated by an LLNL Program to coordinate the issuance and return of respiratory protective equipment.

Qualified user-An individual that has met all training, fit-testing and medical evaluation requirements specified in LLNL procedures.

“SCBA” (Self Contained Breathing Apparatus) - A supplied air respirator with an integral air supply furnished by a cylinder or pressurized vessel located on the back or side of the user used either as the primary air supply or for use during escape if the supply of air from another source is disrupted. This excludes MSA respirators.

1.7 REFERENCES

1. 10 CFR 835 – “Occupational Radiation Protection”
2. American National Standards Institute (ANSI); Standard Z88.2-1992, *Practices for Respiratory Protection*

3. Department of Labor; 29 CFR 1910.134, “Respiratory Protection”

Chapter 2

Respirator Selection

2.1 SCOPE

This policy pertains to the selection of all respirators used for employee and contractor protection at all LLNL locations as well as for all Laboratory employees and operations that occur off premises except non-routine (e.g., emergency or spill) use. It should be noted that at this time, single use or “facepiece filtering” devices are also handled in accordance with these guidelines.

2.2 PURPOSE

The reason for this policy is to document and standardize the criteria and methods used for proper selection of respiratory protective devices in order to ensure compliance with all applicable codes, standards, and regulations and to optimize protection of personnel.

2.3 POLICY

2.3.1 Selection Criteria

Respirator selection is guided by the type and severity of an airborne hazard that may be encountered, as well as other pertinent conditions in the workplace, including:

- Effects of overexposure,
- Oxygen deficiency,
- Airborne contaminant types,
- Contaminant concentrations,
- Expected duration of use,
- Cartridge changeout schedule which is determined by the chemical properties of the air contaminants as well as the mass and types of sorbent materials,
- LLNL assigned protection factors, and
- Limitations of the respirators and the cartridges/canisters

Other considerations include alternative control methods, process and employee activities, and, where applicable, accessibility of breathing air. The following steps will be followed after an initial determination indicates that no other effective means of personnel protection is feasible.

2.3.2 Only Approved Respirators Will Be Used

Only respirators approved by the NIOSH or Mine Safety and Health Administration (MSHA) will be used except as approved, in writing, by the RPA and the DOE Respirator Advisory Group. This is needed because a number of respiratory protective products are available that may not meet NIOSH/MSHA criteria.

Any field modification of an approved device invalidates the approval.

2.3.3 Respirator Selection by Qualified Individuals

Respirator selection will only be done by qualified individuals based on an analysis of the hazards requiring the use of personal protective equipment, including respirators. These persons include all members of the Health Physics and Industrial Hygiene disciplines. This is done using the Asbestos Work Permit, Lead Work Permit, Radiological Work Permit, HAC, or, if necessary,

SPs. All respirator use will be covered by this documentation prepared before respirators are issued, except in emergencies where the documentation is required within two working days of when the respirators are issued. The documentation must be reviewed and, if an overexposure potential is present, approved by the RPA or Alternate RPA prior to the issue of respirators. In the event that these individuals are unavailable, up to a one week supply of respirators may be issued pending final approval (unless there is any significant possibility that an IDLH concentration may be encountered).

Additionally, health care professionals from the HSD are qualified to authorize the use of filtering facepiece respirators for protection from non-occupational allergens. This will be done by advising the RPA and the Respirator Services staff by a fax, e-mail, or memo.

2.3.4 LLNL Assigned Protection Factors

Only LLNL Assigned Protection Factors (APF) will be used in determining levels of protection. In no case should the maximum concentration exceed the APF times the Occupational Exposure Limit (OEL). These Assigned Protection Factors are as follows:

<i>Negative pressure Air Purifying</i>	
Half mask	10
Full face mask	50
<i>PAPR</i>	
Hood, helmet, or loose fitting facepiece	25
Half mask	50
Full face mask	100
<i>Airline</i>	
Continuous flow-hood or helmet (including abrasive blasting helmets)	25
Continuous flow-Full face mask	50
Pressure demand-Half mask	50
Pressure demand-Full face mask	1,000
Pressure demand (with escape unit)	>1,000
<i>Self Contained Breathing Apparatus (SCBA)</i>	>1,000

These Respirators may be given a higher protection factor, under certain circumstances, by the RPA.

The general concepts of respirator selection at LLNL follow the guidelines established in:

- ANSI Z88.2-1992,
- All applicable OSHA Standards (i.e., 29 CFR 1910.134 and comprehensive Health Standards),
- LANL Surface Contamination: Decision Levels, and
- NIOSH Respirator Decision Logic (except the carcinogen protocols), Appendix E of the *NIOSH Guide to Industrial Respiratory Protection*.

In all cases, the most conservative criteria will be followed. For materials that do not have established exposure limits (including Biohazards) the selection of respirators will be based on the known, or suspected, hazards and information from agencies, manufacturers and other sources.

2.3.5 Change out Schedules for Gas/Vapor Cartridges

A change out schedule shall be developed for any air-purifying respirator used for protection from gases or vapors at levels above an established Occupational Exposure Limit. This shall be done by the cognizant discipline using guidance from a source approved by the RPA. At this time guidance supplied by the respirator vendor or a derivation of the Wood Model (located in the Respirator folder on the Health & Safety server at Apple Share zone HC) is acceptable. The MSA cartridge life span predictor model is on the Web at <http://www.msanet.com/safetyproducts/cartlife/index.html>, while the Survivair PC-compatible CD-ROMs which provide equivalent information have been distributed to the ES&H teams. Warning properties are only used as a secondary indication of when cartridges or canisters must be changed whenever a change out schedule can be developed. Warning properties will still be used to warn of end of lifetime in those cases where the guidance needed to develop a change out schedule is not available.

2.3.6 Selection of Particulate Filter Elements

When respiratory protection from particulate material is required, any “95”, “99”, or “100” filter approved by NIOSH in accordance with 42 CFR may be used provided the concentration inside the respirator will not exceed the OEL as defined by either the APF of the respirator or the implied protection factor of the filter (20 for “95” filters, 100 for “99” filters, or 3333 1/3 for “100” filters), whichever is less. Filters, other than HEPA filters, certified under 30 CFR may be used only if information is available demonstrating that the particle size which will be encountered is 2 micrometers or greater. Sources of information about particle sizes are literature, information about particle sizes supplied by the manufacturers of equipment that generates particulate, particle sizing, or other reliable source of information.

2.3.7 Single Use Respirators Other than Filtering Facepieces

Single use half facepiece respirators are available. These shall be treated as reusable half-facepiece respirators, except they shall be disposed of at the end of a shift, or sooner.

2.3.8 Powered Air Purifying Respirators

Respirator Services will provide Powered Air Purifying Respirators (PAPRs), on request, if they are available and will provide adequate protection. Exception: Asbestos and Lead workers will always be provided tight fitting PAPRs, upon request, if the required protection needs are met.

2.3.9 Decontamination of Returned Respirators

All respirators returned to Respirator Services shall be decontaminated to remove accessible radionuclide and/or chemical contaminants.

2.3.10 Nuisance and Comfort Situations

Filtering facepiece may be used for *nuisance situations* of work related contaminants or for limited protection from environmental allergens (e.g., pollens or other non-disease causing microbial agents). The area Industrial Hygienist can advise that the respirator is not being used to avoid overexposures by checking a blank following the question

“For filtering facepiece respirators only:

Is this respirator being used to prevent allergic reactions? _____,

Is this respirator being used for personal comfort/preference? _____

that follows the “Respiratory Protection Requirements: Air Purifying Respirators” section of the HAC. Fit testing is not required for respirators used for nuisance situations.

All respiratory protective equipment issued by LLNL, *including* filtering facepiece respirators, are NIOSH approved, and no non-approved “dust masks” or “comfort masks” will be issued. However, employees may use such non-approved masks provided that their use is limited to non-occupational exposures.

2.3.11 Voluntary Uses of Respirators Other Than Filtering Facepieces

According to OSHA, 29 CFR 1910.134(c)(2)(i) and (ii), “An employer may provide respirators at the request of employees or permit employees to use their own respirators, if the employer determines that such respirator use will not in itself create a hazard.” LLNL implements this by providing an appropriate respirator to those who request them. To comply with the regulation, Respirator Services will issue respirators to voluntary users after they have been medically qualified at Health Services, received appropriate training, defined in Chapter 3 of this document, and been fit tested following the same procedures as other respirator users. Then the respirators shall be issued by Respirator Services with cartridges/canisters for periods of use defined by the area Health Physicist, area Industrial Hygienist, or the Respirator Program Administrator and documented using a HAC. This does not extend to uses of respirators other than uses related to employment at LLNL.

2.4 RESPONSIBILITIES

In order to ensure that only proper respiratory protective equipment is selected and assigned the following responsibilities have been established:

2.4.1 The RPA will:

- Review all HACs submitted to the Respirator Program.
- Maintain an electronic HAC file,
- Provide technical support, including training, as requested, regarding the proper selection of respiratory protective equipment.
- Audit compliance with these requirements on an ongoing basis.
- Approve methods of developing respirator cartridge changeout schedules for use by area Industrial Hygienists as they become available.
- Conduct or review analyses of cartridge changeout schedules for all air-purifying respirators used for employee protection from gases and vapors in excess of an LLNL Exposure Limit.

2.4.2 Hazards Control discipline members will:

- Evaluate each area and complete/update a HAC form for all respirator use in their designated areas of responsibility at least annually. (Note: It is generally assumed that a Team discipline will be responsible to complete these analyses for personnel assigned to work in their area unless an agreement has been established with another ES&H Team.)
- Check a blank following the questions

For filtering facepiece respirators only:

Is this respirator being used to prevent allergic reactions? _____ ,

Is this respirator being used for personal comfort/preference? _____

that follows the “Respiratory Protection Requirements: Air Purifying Respirators” section of the HAC when a respirator is not being used to avoid overexposures to air contaminants.

- The Industrial Hygienists provide cartridge changeout schedule guidance using methods approved by the RPA.
- Instruct respirator users, their supervisors, and IPAs about decontamination and contamination monitoring procedures to be followed before returning respirators to Respirator Services.
- Send copies of HACs to Respirator Services and the RPA.
- Refer personnel to HSD for medical evaluations, if required.

2.4.3 Respirator Services will:

- Issue respiratory protective equipment only if a current Asbestos Work Permit, Lead Work Permit, Radiological Work Permit, HAC, or SP is available.
- Maintain expired HACs for a minimum of three (3) years.
- Contact the RPA for approval of any use of gas or vapor removing or filtering facepiece air purifying respirators if there is a potential for exposure above the OEL.

2.4.4 HSD will

- Approve filtering facepiece respirators to protect employees from exposures to allergenic dusts in the air.
- Advise the area Industrial Hygienist, RPA, and Respirator Services staff by a fax, e-mail, or memo if filtering facepiece respirators have been approved to protect employees from allergenic air contaminants.

2.4.4 Respirator Users will:

- Conduct positive and negative seal checks (“fit tests”) before starting to use masks.
- Store masks in clean, dry locations in a manner that avoids excessive bending of the respirators.
- Store full facepiece respirators so the transparencies are not rubbing or scratching other surfaces.
- Report instances of contaminant breakthrough to their supervisor promptly and take action to end continuing exposures, such as obtaining replacement cartridges or changing the type of cartridge used (which will require revising the HAC for that operation).
- Use filtering facepiece respirators only for the purpose for which they are issued, in accordance with training and operating instructions.
- Avoid providing any respirators to other users unless that use is already documented and approved by the LLNL Hazards Control Department.
- Remove chemical or radiological contamination (i.e., decontaminate) respirators before returning them to Respirator Services as directed by their supervisor or IPA.

2.4.5 Supervisors and IPAs will:

- Control the access to respirators to ensure that only approved users are allowed to use the respirators and that the specified respirators are only used for purposes specified by the governing Asbestos Work Permit, Lead Work Permit, Radiological Work Permit, HAC, or SP.
- Provide or coordinate training and medical review of respirator users.
- Assure that users of respirators in nuisance situations receive Appendix A of this document (Appendix D of 29 CFR 1910.134) and are trained in properly fitting and using filtering facepiece respirators.

2.5 REFERENCES

1. American National Standards Institute, Z88.2-1992, *Practices for Respiratory Protection*.
2. US Department of Labor, 29 CFR Part 1910 Subpart I - Personal Protective Equipment.
3. US Department of Health and Human Services, 42 CFR Part 84, "Respiratory Protective Devices".
4. National Institute for Occupational Safety and Health (NIOSH), *Guide to Industrial Respiratory Protection*, 1987. http://www.osha-slc.gov/SLTC/respiratory_advisor/oshfiles/resp_toc.html
5. OSHA, The Advisor Genius: Selecting an Appropriate Respirator. http://www.osha-slc.gov/SLTC/respiratory_advisor/advisor_genius_nrdl/advisor_genius.html
6. Department of Energy, Order 440.1A: Worker Protection Program for DOE Federal and Contractor Employees.
7. Los Alamos National Laboratory, Surface Contamination: Decision Levels, (LA-4558-MS).
8. Compressed Gas Association, G-7-1988, Compressed air for human respiration.
9. ANSI/CGA G-7.1-1989, Commodity Specification for air.

2.6 DEFINITIONS

Assigned Protection Factor – The expected level of protection, in the workplace, that would be provided by a properly functioning respirator (or a class of respirators) by fully trained and properly fitted workers.

Filtering Facepiece Respirator – A negative-pressure aerosol filtering respirator that is discarded in its entirety after each use or if excessive resistance, sorbent exhaustion for masks designed to eliminate nuisance odors, or physical damage renders it unsuitable for further use. The filtering medium is an integral part of the facepiece or constitutes the entire facepiece. Sometimes referred to as "dust masks".

HEPA (High Efficiency Particulate Air) /P100 – A filter or cartridge type that is designed and tested to ensure a penetration of less than 99.97 per cent of an aerosol in the "most penetrating range" particle size following the older 30 CFR system. Any N, P, or R filter rated at "100 %" efficiency under the newer 42 CFR system is functionally equivalent in terms of penetration in an oil-free environment. The prefix letters refer to the ability of the filtering medium to withstand exposure to oil mist: "P" = oil Proof, R = oil Resistant, and N = Not resistant to (Not

recommended for use with) oil. P100 cartridges have the same pink color as traditional HEPA filter cartridges.

Health Standards – Specific standards, established by OSHA, providing specific and detailed guidance for handling certain chemicals in the workplace. Examples include; inorganic lead, benzene, asbestos, and cadmium.

IDLH (Immediately Dangerous to Life and Health) – This value represents a calculated Airborne Concentration to which a healthy worker could be exposed for 30 minutes, that would not affect ability to escape or cause any permanent health effects.

Maximum Use Concentration (MUC) – This airborne concentration represents the highest concentration in which air-purifying respirators may be reliably used for protection.

Nuisance Situation – Airborne contaminant concentration that does not exceed an Exposure Limit in cases where the OEL $\leq 5 \text{ mg/m}^3$. This includes potential exposures to dusts which contain allergens and excludes dusts which may harbor pathogenic organisms or spores, such as Valley Fever or Histoplasmosis spores. Nuisance situations also include exposures to gases and vapors with unpleasant odors if exposures will occur at concentrations well below the OEL, such as the odors arising from garbage.

Occupational Exposure Limit (OEL) – The maximum concentration of an air contaminant to which working people can be exposed according to an accepted source.

Occupational Health Professional (OHP) – an LLNL Health and Safety Division Health Physicist or Industrial Hygienist. (Note: In the case of respirators issued for asthma, allergies or other pre-existing medical conditions, the OHP rendering the decision can and should be the LLNL Occupational Health Examiner.)

Odor Threshold – The average airborne concentration of a substance that can be detected by the sense of smell. A recommended reference is listed in the reference section of this document.

Oxygen Deficient Atmosphere – An environment with less than 19.5% oxygen at Livermore. The definition of oxygen deficiency in 29 CFR 1910.134 is altitude-dependent so consult this standard if a change of altitude is anticipated.

Poor Warning Properties – A vapor or gas has poor warning properties if it does not have consistent odor, taste, or irritation at concentrations at or below the OEL. Dusts and other particles are considered to provide an indication when it is necessary to change filters by creating increased breathing resistance.

Chapter 3

Respirator Training

3.1 SCOPE

These requirements are applicable to all LLNL employees and supplemental labor personnel conducting work at any LLNL facility or project, except those individuals working at the Nevada Test Site or other DOE facility whose respirator protection program has been specifically approved by the LLNL RPA.

These requirements do not specifically apply to LLNL on site projects that are conducted exclusively by a sub-contract or construction firm, although those organizations are required to meet all applicable regulations.

3.2 PURPOSE

The best respiratory protection equipment can not properly protect people if not used correctly. Therefore, the training criteria specified herein are required prior to any respirator use or handling. These programs are based on applicable regulatory procedures and the specialized needs of LLNL projects.

3.3 POLICY

No individuals (including standby workers) working on any LLNL project will be issued, or requested to wear, respirators unless all applicable training requirements are current.

All respirator users will receive applicable training at least annually. This requirement does not pertain to individuals that only wear filtering facepieces in situations where air contaminant concentrations will not exceed the occupational exposure limit.

Individuals issuing respirators or supervising respirator wearers must attend applicable training (e.g., HS 4660) at least every three years.

Respirator training programs include multiple techniques (such as, hands on, demonstration, lecture, interactive computer based training (CBT), and/or videotape).

Training will only be conducted following medical approval of wearers.

Individuals designated as Emergency Responders may require more frequent refresher training or drills than other users. Any specific requirements will be specified in job specific documents, such as, OSPs, SOPs, Emergency Response Plans, Contingency Plans, etc.

All respirator related courses will be fully documented in the Lab's LTRAIN database system, pursuant to the guidelines established in the LLNL ES&H Manual.

3.4 RESPONSIBILITIES

3.4.1 Respirator Services will:

- Train users for air purifying and generic air supplied portion of the program, HS4610-CBT and HS4620-CBT, respectively, in accordance with the LLNL and HCD training programs.
- Train users of air supplied respirators, other than self-contained breathing apparatus (SCBA) and respirators containing escape air supplies, HS4623, in accordance with the LLNL and HCD training programs.
- Maintain records using the Integrated Respirator Information System (IRIS).

3.4.2 EMD will:

- Train the following in accordance with the LLNL and HCD Training Programs and send attendance rosters of student completions to the Hazards Control Education and Training Division (ETD) Training Records Office within two working days of the completed training:
 Users of SCBAs and respirators containing escape air supplies, HS4624 and HS4630, respectively.
 H&S Technicians, and programmatic personnel, regarding proper monthly inspections.
- Schedule training sessions as requested by ETD in accordance with the Course Schedule Matrix (maintained by ETD).

3.4.3 Supervisors will:

- Instruct employees as to the “specific” issues associated with the workplace using HAC.
- Orient (or reorient) wearers of single use dust-mist respirators as to limitations at each issue.
- Ensure that all personnel are properly trained, as specified herein.
- Attend HS4660 CBT Respirator Training for Supervisors and IPAs.

3.4.4 Hazards Control disciplines (Industrial Hygienists or Health Physicists) will:

- Indicate when HS4623 or HS4624 is required (this is shown in the “Administrative Controls” section of a HAC).
- Coordinate the teaching of specialized courses with the RPA.

3.4.5 RPA will:

- Support HS4623 job specific respirator training sessions. Documents the training and submits the documentation to ETD for recording in LTRAIN.
- Review and approve all respirator courses for technical accuracy and consistency.

3.4.6 ETD will:

- Maintain all training records of respirator users, HS4610-CBT, 4620-CBT, 4623, 4624, 4630, and 4660.
- Assist Respirator Services and EMD, as appropriate, in the development, revision, procurement and updates of the content, methods of delivery, and materials (student handouts, etc.) used for respirator training.
- Approve HCD training courses in accordance with the LLNL and HCD Training Plans.
- Assist the RPA in developing descriptions for respirator safety courses for the HCD course catalog and appropriate questions for the LTRAIN questionnaire used to identify individual employee training needs.
- Maintain the master copy of the HCD Course Schedule Matrix and schedule HCD training sessions via the on-line centralized scheduling system.
- Provide facilities, as requested, for respirator safety training.

3.4.7 Respirator users will:

- Participate in training, when scheduled.
- Follow all specified LLNL rules and procedures.

3.5 REFERENCE

- American National Standards Institute; Z 88.2-1992, Practices for Respiratory Protection, 1992.

3.6 COURSE DESCRIPTIONS:

These are posted at: http://www.llnl.gov/llnl_only/training/coursequery.shtml.

3.6.1 HS4610-CBT Basic Respirator Training - CBT

This hands-on demonstration and videotape presentation provides general training in the use of air-purifying and air-supplied respirators (both half-mask and full-face) and powered air purifying respirators (upon request). The course is given at Respirator Services in conjunction with the annual respirator quantitative fit testing. Employees must be approved to wear a respirator by HSD before taking this course.

Topics:

- Equipment operation
- Equipment cleaning
- Seal checking and equipment inspection
- Equipment limitations

Repeat frequency: 12 months

Prerequisite course: None

Alternate course: None

Other Requirement(s): Approval by HSD to wear a respirator

Date(s): Call ext. 2-7910 for appointment

Time(s): To be announced

Length of course: 1 hour(s)

Type of instruction: CBT and demonstration

Instructor: Respirator Services, Hazards Control Department

Location: Respirator Services

Fee: None

Registration deadline: None

3.6.2 HS4620-CBT Basic Air-Supplied Respirator Training

This course is taken with HS4610-CBT at Respirator Services in conjunction with the annual respirator quantitative fit testing. Employees must be approved to wear a respirator by HSD before taking this course..

Repeat frequency: 12 months

Prerequisite course: None

Alternate course: None

Other Requirement(s): Approval by HSD to wear a respirator

Date(s): Call ext. 2-7910 for appointment

Time(s): To be announced

Length of course: 1 hour(s) (with HS4610-CBT that is taken at the same time)

Type of instruction: CBT and demonstration

Instructor: Respirator Services, Hazards Control Department

Location: Respirator Services

Fee: None

Registration deadline: None

3.6.3 HS4623 Specific Training For Users of Supplied Air Respirators without Escape Air Supplies

Topics:

- Equipment operation
- Equipment checkout
- Safety precautions
- Inspection requirements

Required for: Users of supplied air respirators without escape air supplies

Repeat frequency: 12 months

Prerequisite course:

- HS4610-CBT Basic Respirator Training
- HS4620-CBT Basic Air-Supplied Respirator Training

Alternate course: None

Length of course: 2 hour(s)

Type of instruction: Lecture/Hands-on

Instructor: RPA

Estimated Fee (Min): \$0

Estimated Fee (Max): \$0

Registration deadline: None

3.6.4 HS4624 Specific Training for Users Of Supplied Air Respirators with Escape Air Supplies

Topics:

- Equipment operation
- Equipment checkout
- Safety precautions
- Inspection requirements

Repeat frequency: 12 months

Prerequisite courses:

- HS4610-CBT Basic Respirator Training
- HS4620-CBT Basic Air-Supplied Respirator Training

Required for: Users of supplied air respirators with escape air supplies

Repeat frequency: 12 months

Prerequisite course: None

Alternate course: None

Length of course: 2 hour(s)

Type of instruction: Lecture/Hands-on

Instructor: EMD

Estimated Fee (Min): \$ 0

Estimated Fee (Max): \$ 0

3.6.5 HS4630 Self-Contained Breathing Apparatus

This course provides classroom training and an exercise in the use of self-contained breathing apparatus (SCBA). The course is limited to employees whose job assignment specifically requires the use of an SCBA or whose expertise may be needed in an emergency. Contact EMD at 25194 to obtain this specialized training.

Topics:

- Equipment operation
- Equipment checkout
- Safety precautions
- Inspection requirements

Required for: Users of SCBA

Required by: 29 CFR 1910.134 and ANSI Z88.2

Repeat frequency: 12 months

Prerequisite course:

- HS4610-CBT Basic Respirator Training
- HS4620-CBT Basic Air-Supplied Respirator Training

Other Requirement(s): Approval by HSD to wear a SCBA and must be respirator fit tested by Hazards Control.

Date(s): Scheduled as needed, call 25194

Time(s): To be announced

Length of course: 2 hour(s)

Type of instruction: Lecture, videotape, hands-on demonstration, and exercise

Instructor: EMD

Location: To be announced

Fee: None

Number of participants: N/A

Registration deadline: None

3.6.6 HS4660 Respirator Training for Supervisors of Respirator Users and Respirator IPAs

This course is taught by the RPA to provide IPAs and supervisors of respirator users the information necessary to carry out their responsibilities. Supervisors who do not directly supervise respirator users in their workplaces do not need to take this class.

Topics:

- Selection of respirators
- Use limitations
- Identification of respirators
- Issuance control
- Care, maintenance, and storage of respiratory equipment
- Requirements for respirator users
- LLNL/DOE requirements and programs
- Monitoring and oversight of respirators

Required for: Supervisors of respirator users and Respirator IPAs

Required by: 29 CFR 1910.134 and ANSI Z88.2

Repeat frequency: 36 months

Prerequisite course: None

Alternate course: None

Other Requirement(s): None

Date(s): Scheduled as needed

Time(s): To be announced

Length of course: 2 hour(s)

Type of instruction: Lecture, hands-on demonstration, and visual aids

Instructor: RPA, Hazards Control Department

Location: To be announced

Fee: None

Number of participants: 35

Registration deadline: None

Chapter 4

(Reserved)

Appendix A

Hazard Assessment and Control Form

The Hazard Assessment and Control (HAC) form is provided in the following pages. The instructions for filling out the form are provided in the LLNL Industrial Hygiene Policy and Information Manual, IHPIM #50, "Exposure Assessment and Monitoring Plan."

Hazard Assessment and Control Form

This document summarizes key hazards and controls needed to perform work including, in some cases, specific respirators to be used. In accordance with ES&H *Manual* C2, this document is not a work authorization

File name:	Prep/Rev. Date:
Prepared by (list all):	Reviewed by (list all):
Expiration Date:	

Fill in only the necessary blocks.

Operation Description

Building:	Room/Area:	Supporting Documentation ID:	Supporting Doc' Needed?
ES&H Team:	Program:	Operation Start Date:	
Supervisor or Resp' Individual:	Employee No.	Phone/Page No.	
Operation	Hours/Day	Days/Year	

Operation Description: If the work is done in phases or as discrete activities, then define the work to be done in each phase or activity with enough precision so the reader will know when a new phase or activity requiring new PPE is beginning.

Personnel Involved: Name(s)	LLNL Employee No.	Job Category Code	Relative Exposure rating

Comments: _____

Hazard Evaluation

Hazard(s):

Potential for: CS entry ____ Permit CS entry ____ O₂ Deficiency ____ Peroxide Formation ____

No.	Agent	Exposure Level	Exposure Limit Type	Route(s) of Exposure	Evaluation Type	Current OEL	Reference Source
1							
2							
3							

Is Additional Monitoring Necessary? Yes ____ No ____ Under Review ____

Rationale:

If the Answer is Yes, also complete the following:

No.	Agent	Method	Dates for Initial Monitoring	Periodic Monitoring Frequency

Control Methods

Engineering Controls:

	Phase/Activity1	Phase/Activity 2	Phase/Activity 3
Eyewash/Shower			
Glovebox			
Hood/fan number			
Interlocks			
Portable ventilation			
Other engin. controls			
Comments:			

Administrative Controls:

	Phase/Activity1	Phase/Activity 2	Phase/Activity 3
Training			
Requirements:			
Respirator-related			
HAZCOM-related			
Posting/labeling			
HHC Poster			
Other signs/labels			
Other admin. controls			
Medical surveillance?			
Comments:			

Personal Protective Equipment:

	Phase/Activity1	Phase/Activity 2	Phase/Activity 3
Eye protection			
Garments			
Gloves			
Head protection			
Hearing protection			
Safety shoes			
Shoe covers			
Other PPE controls			
Comments:			

Respiratory Protection Requirements:

Air Purifying Respirators:

	Phase/Activity1	Phase/Activity 2	Phase/Activity 3
<i>Filter/Cartridge Type</i>			
N 95 or P95			
HEPA/P100			
Acid gas			
Organic vapor			
"Multi contaminant" or "GME"			
Other cartridge (specify type)			
Combination (specify)			
Canister (specify type)			
<i>Configuration</i>			
Filtering facepiece (dust mask)			
N95 P95 N100 P100			
Half mask APR			
Full facepiece APR			
Other APR(specify type)			

Air Purifying Respirators (Contd.):

Frequency of respirator exchange (if not daily, consider cartridge changeout):			
OK to reuse filter? ____ Note any other decontamination instructions below. For filtering facepiece respirators only: Is this respirator being used to prevent allergic reactions? ____ , Is this respirator being used for personal comfort/preference? ____			
Comments:			

Air Supplied Respirators

	Phase/Activity1	Phase/Activity 2	Phase/Activity 3
<i>Operating Type</i>			
Constant flow			
Pressure demand			
<i>Type</i>			
SCBA			
Airline			
Airline w/escape bottle			
Type (if not Full Face)			
<i>Air source/location</i>			
Comments:			

Issue Point Administrator		Badge No.	
Issue Point Location			

Additional Control Requirements

--

General Comments

--

Emergency Procedures

Specify emergency measures, if applicable:

--

Prejob Briefing/Worker Acknowledgment:
NOTE: This section is *optional* depending on ES&H Team and client organization procedures.

I have read the requirements on this Hazard Assessment and discussed the job with Hazards Control personnel. I understand and accept my responsibilities to safely carry out this operation.

Name	Signature	Employee #	Date

Appendix B

29 CFR 1910.134, Appendix D (Non-Mandatory)

Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.